

REMARKS

AMENDMENT (B)

New drawing Figure 5 relates to New Claim (27)

## AMENDMENT (B)

Version with markings to show changes made

## FRICTION FREE GRAND PIANO ACTION

## FIELD OF THE INVENTION

The present invention relates to grand pianos affected by excessive friction between the knuckle dependent from the shank carrying the piano hammer and the lifting surface of the jack lifting the knuckle.

## BACKGROUND OF THE INVENTION

Conventional grand pianos are plagued by excessive friction between the knuckle and the lifting surface of the jack causing noise requiring frequent regulation with lubricant being applied to the knuckle and the lifting surface of the jack to reduce the excessive friction. Friction is caused by gravity of the hammer assembly, and made excessive by the jack spring being in a fixed constant tension exerting pressure upon the jack. ~~[and the wippen lever.]~~

## SUMMARY OF THE INVENTION

In the present invention the jack spring is relocated making it possible to disable the jack spring during disengagement of the jack from the knuckle, thereby eliminating the excessive friction caused by the fixed constant tension of the jack spring exerting pressure upon the jack. ~~[and the wippen lever.]~~

PATENTS RELATING TO THE PROBLEM OF EXCESSIVE FRICTION

Finholm #4,774,868

Steinway #5,511,454 - #5,911,167

Baldwin #6,232,537.

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FIG.2 shows the arm 13A of the jack 13 being supported by the spiral spring 31 dependent from the regulating screw 32 carried by the flange 25; the regulating screw regulates the spiral spring to an appropriate tension, a higher tension would cause the jack to rise; the upward movement of the jack along with the spiral spring causing the spiral spring to be shortened effecting the spiral spring inert, disabled, causing the jack to escape from the knuckle 12 easily by a very light piano key 19 effected by absence of the traditional excessive friction between the knuckle 12, and the lifting surface of the jack 13, when the arm 13A of the jack 13 hits the escapement let off button 29.

FIG.3 shows the arm 13A carrying a regulating button 33 resting on a spring 34 carried by a rail 35, the upward movement of the arm 13A effecting the spring 34 carried by the rail 35, to rise ~~[in contact with the regulating button 33, effecting the spring 34]~~ inert, disabled, causing the jack to escape from the knuckle without the traditional excessive friction, when the arm of said jack hits the escapement let off button.

FIG.4 Shows the end of the spiral spring 31  
being attached to the end of the repetition lever 20,  
the other end of the spiral spring 31 being attached  
to the arm 13A of the jack 13.

FIG. 5 Shows spring 34A carried by wippen lever 18 supporting arm  
13A opposing regulating button 29A, arm 13A opposing escapement  
let off button 29. Upon depression of key 19, spring 34A contacts  
regulating button 29A disengaging spring 34A from arm 13A and at the  
same time arm 13A contacts escapement let off button 29 effectuating  
jack 13 to slide away of the knuckle 12 without excessive friction.